Non-technical Abstract

Treatment is a critical problem in the management of severe Peripheral Artery Occlusive Disease (PAOD). Three therapeutic approaches are usually considered for patients suffering from PAOD (Isner & Rosenfield, 1993) : 1) risk factor modification, such as tobacco, dietary changes, etc. ; 2) when possible, percutaneous transluminal angioplasty (PTA) to revascularize the ischemic limb; 3) bypass surgery with the use of prosthetic material or vein graft. Both PTA and especially surgery carry a significant morbidity/mortality in these patients who often suffer concomitantly from an already existing heart or disseminated vascular disease.

Therapeutic angiogenesis is a recent concept based on the use of angiogenic factors such as Vascular Endothelium Growth Factor (VEGF) or Fibroblast Growth Factor (FGF) to promote neovascularization for the treatment of ischemic tissues. Both the administration of recombinant angiogenic factors, or gene transfer by viral and non viral DNA vectors that express these factors, were shown to induce angiogenesis in a number of animal models, as well as very recently in humans. Baumgartner et al. (1998) published results of a gene therapy clinical trial evaluating VEGF in patients with PAOD. This study established the proof of concept for therapeutic angiogenesis indicating that plasmid gene therapy with VEGF is sufficient to induce clinical activity in patients with PAOD.